# ON THE EUROPEAN BROOK LAMPREY, *LAMPETRA PLANERI* (BLOCH, 1784) (PETROMYZONTIDAE), IN PORTUGAL

by

Carlos ALMAÇA (1) and Pedro A. CORTES (2)

**ABSTRACT.** - The occurrence of *Lampetra planeri* in Portugal is confirmed. The species inhabits rivers in central Portugal (Tejo basin).

**RÉSUMÉ.** - *Lampetra planeri* est signalée pour la première fois du Portugal de façon certaine. Toutes les citations antérieures de cette espèce étaient controversées ou ambiguës. L'espèce vit dans le bassin du Tage, dans le centre du Portugal.

Key-words. - Petromyzontidae, *Lampetra planeri*, Portugal, Taxonomy, Ecology.

The taxonomic history of *Lampetra* species in the Iberian Peninsula was described by Almaça and Collares-Pereira (1988). In the same paper the definitive occurrence of *L. fluviatilis* (Linnaeus, 1758) in the Iberian Peninsula was proved. Other specimens of *L. fluviatilis* have been captured in River Sorraia since the original observations, but the presence of *L. planeri* in Portugal or Spain had not been confirmed.

Meanwhile, Alvarez and Doadrio (1986) reported *L. planeri* from River Olabidea (Navarra, Spain). As no diagnostic characters were given by these authors, it is impossible to be sure of the specific identity of their samples. In fact, Alvarez and Doadrio (1986) only refer to myomere counts from ammocoetes and morphometrics of adults. They report that the ammocoetes have 55 to 63 ( $\overline{X}$ = 59.7) myomeres, a count which conforms with typical values for both *L. fluviatilis* and *L. planeri* (Hardisty, 1986a,b).

In 1989, *L. planeri* was captured in Portugal (River Seiça, a subtributary of River Zêzere; Fig. 1). Field observations on the ecology and breeding behaviour of the species were made by one of us (P.A.C.). These observations and the description of adults and ammocoete are presented in this paper.

## MORPHOLOGY AND MORPHOMETRICS

As *L. planeri* seems to be a rare species and River Seiça runs in a protected area (Parque Natural das Serras d'Aire e Candieiros), only a small sample was collected and preserved for further examination: two adult males on March, 2 (MB 05-1043); one adult male and one adult female on April, 17 (MB 05-1040); and

---

(1) Museu Bocage, Departamento de Zoologia e Antropologia, and Centro de Fauna Portuguesa (INIC), Faculdade de Ciências, Rua da Escola Politécnica, 1200 Lisboa, PORTUGAL.

(2) Seiça, 2490 Ourém, PORTUGAL.

*Cybium 1991, 15(3): 189-192.*

one ammocoete on August, 3 (MB 05-1035). Measurements and myomere counts are shown in table I.

### Adults

Intestine threadlike, 0.16 to 0.25 mm in diameter in males and 0.14 mm in the female. Infra-oral plate: 7 cusps in males and 5 cusps in the female. Three endolaterals on each side with 1 or 2-2-1 cusps in males and 1-2-1 in the female. Cusps are blunt and pale.

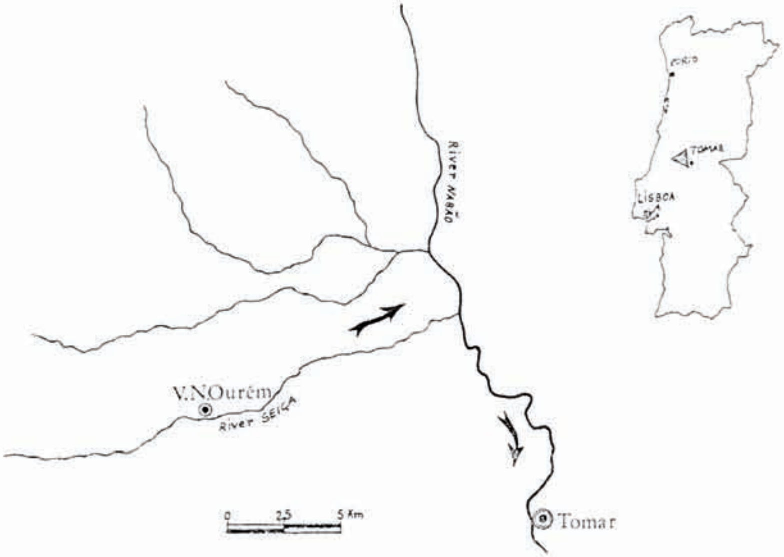

Fig. 1. - River Seiça, central Portugal. Pollution in R. Seiça results from sewage (V.N. Ourém) and effluents of sand-cleaning plants.

Table I. - *Lampetra planeri* from River Seiça. Myomere count and morphometrics. (TL: total length; d-B1: prebranchial length; B1-B7: branchial length; B7-a: trunk length; a-C: tail length; d: disc length; O: eye length; hD2: second dorsal fin maximum length).

| Characters | Males | Female | Ammocoete |
|---|---|---|---|
| Myomeres | 61 - 63 | 63 | 60 |
| TL (mm) | 108 - 120 | 95 | 160 |
| In % of TL | | | |
| d-B1 | 11.2 - 11.8 | 11.0 | 6.7 |
| B1-B7 | 9.7 - 10.9 | 9.2 | 11.9 |
| B7-a | 47.2 - 49.6 | 50.5 | 55.6 |
| a-C | 26.3 - 29.1 | 25.8 | 24.3 |
| d | 4.2 - 5.3 | 5.0 | – |
| O | 1.8 - 2.3 | 1.6 | 0.8 |
| hD2 | 5.8 - 6.6 | 5.1 | – |

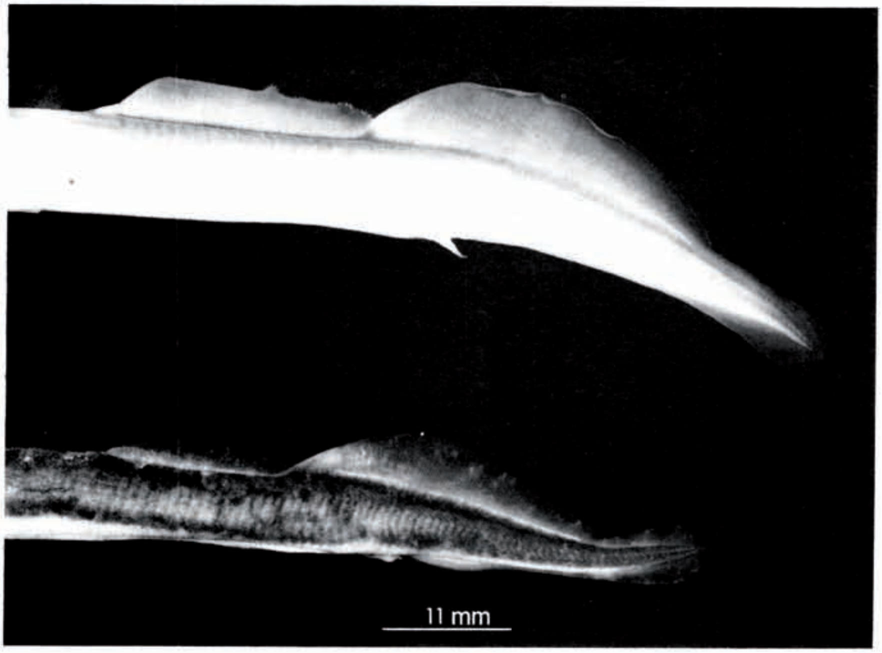

Fig. 2. - *Lampetra planeri* from River Seiça. Male (above) and female (below). Photo Paulo de Oliveira.

Dorsal fins continuous (Fig. 2). Anterior edge of $D_2$ regularly curved in males and straight in the female. Female with a small anal fin (Fig. 2). Tail curving upwards in the female and straight or curved (upwards or downwards) in males. Males with a conical 'penis-like' urogenital papilla protruding externally (Fig. 2).

Back and sides dark brown, the pigment expanding ventrally in the female. Ventral side whitish.

**Ammocoete**

Dome-like oral hood. Eyes below the surface. Back and left side dark grey, right side light grey. Ventral side whitish with small grey dots.

**Remarks**

Metamorphosis in Petromyzontidae is accompanied by considerable changes in body proportions. This feature is exhibited by the Portuguese *L. planeri* and a comparison of the biometry in adults and ammocoete (Table I) shows: higher relative prebranchial, tail, and eye length in adults; higher relative branchial and trunk length in the ammocoete.

Sexual differences in body proportions seem to be restricted to the higher relative height of D2 in males (Table I), which is related to the different curvature of that fin in males and female (Fig. 2).

## ECOLOGY AND BREEDING BEHAVIOUR

River Seiça (Fig. 1) is one of the five small streams running to River Nabão, which is a tributary of River Zêzere. The basin of R. Seiça extends for nearly 110 km$^2$. From May to October and during longer or shorter periods the upper and terminal sections of R. Seiça dry up. It then becomes reduced to its middle section. Water flow varies from 0 to 6000 l/s and is highly dependent on the rainfall in the catchment.

Bottom is covered with sand (deep water) or gravel (shallow water). River Seiça is now polluted by sewage (Vila Nova de Ourèm) and the effluents of sand cleaning plants. During summer, with the decreasing water flow, pollution is high and lampreys and other fish abandon the section of the river near the town. From March to April 1989 thirty specimens of *L. planeri* were observed on gravel bottom, some of them excavating their nest. Most of the lampreys were seen in groups of two or three, but a group of eight was observed in one occasion building a nest. The observations have always been made during the daytime, at depths of 10-30 cm, water temperature 13-15°C, and water flow 300-500 l/s. Complementary observations made in aquaria showed that animals remained in the gravel, with just the head exposed. They have been kept alive in aquaria from 10 days to one month.

Nests are elliptical-shaped depressions, the major axis measuring nearly 30 cm. They have been observed in gravel bottom but, the middle of the rest was sand because the lampreys removed the gravel from the central part of the nest. Mating was observed under natural conditions. Females attach the oral disc to a stone, the body positioned along the nest depression. Then, a male attaches its oral disc to the head of the female and coils the tail around the female. The female starts a vibratory activity trying to bury the tail in the sand. The 'copulatory' act lasts for 5 seconds and is repeated several times over a long period (in one case more than 5 hours). During the phase of peak 'copulatory' activity, two 'copulatory' acts can occur in just one minute.

The removing of gravel from the nest still continues within the 'copulatory' period. After that period some females buried in the nest depression, while others are swept downstream by the current. Displaced females try to return to the nest and this is clearly difficult for them.

Ammocoetes were observed in August, 1989, buried in the sand at 30 cm depth. Their presence is shown by circular holes 3-6 mm in diameter. The mouth is applied to these holes and the animal remains positioned vertically in the sediment.

## REFERENCES

ALMAÇA C. & M.J. COLLARES-PEREIRA, 1988. - On the occurrence of the European River Lamprey, *Lampetra fluviatilis* (Linnaeus, 1758), in the Iberian Peninsula. *Cybium*, 12(1): 9-15.

ALVAREZ J.J. & I. DOADRIO, 1986. - Sobre la presencia de *Lampetra planeri* Bloch, 1784 in España. *Doñana, Acta Vert.*, 13: 158-160.

HARDISTY M.W., 1986a. - *Lampetra fluviatilis* (Linnaeus, 1758). *In*: The Freshwater Fishes of Europe. Petromyzontiformes. (Holcik J., ed.), 249-278. AULA-Verlag, Wiesbaden.

HARDISTY M.W., 1986b. - *Lampetra planeri* (Bloch, 1784). *In*: The Freshwater Fishes of Europe. Petromyzontiformes. (Holcik J., ed.), 279-304. AULA-Verlag, Wiesbaden.

HOLCIK J., 1986. - Determination criteria. *In*: The Freshwater Fishes of Europe. Petromyzontiformes. (Holcik J., ed.), 24-32. AULA-Verlag, Wiesbaden.

*Reçu le 28.03.1991.*
*Accepté pour publication le 12.07.1991.*